macab

...a step into a digital world

130820 • 02234

Engenius

PROFESSIONELLA ACCESSPUNKTER FÖR WIFI

Art. nr: 633 86 35 | Engenius ENH202 outdoor Access Point 2,4 GHz | E-nr: 51 702 26

Art. nr: 633 86 36 | Engenius ENH210EXT outdoor Access Point 2,4 GHz | E-nr: 51 702 35

- **WiFi till restauranger, konferenslokaler mm**
- **Data till reklampelare**
- **Internet till campingplatser**
- **Internet punkt till punkt, upp till 4 km**
- **WiFi till övervaknings-system**

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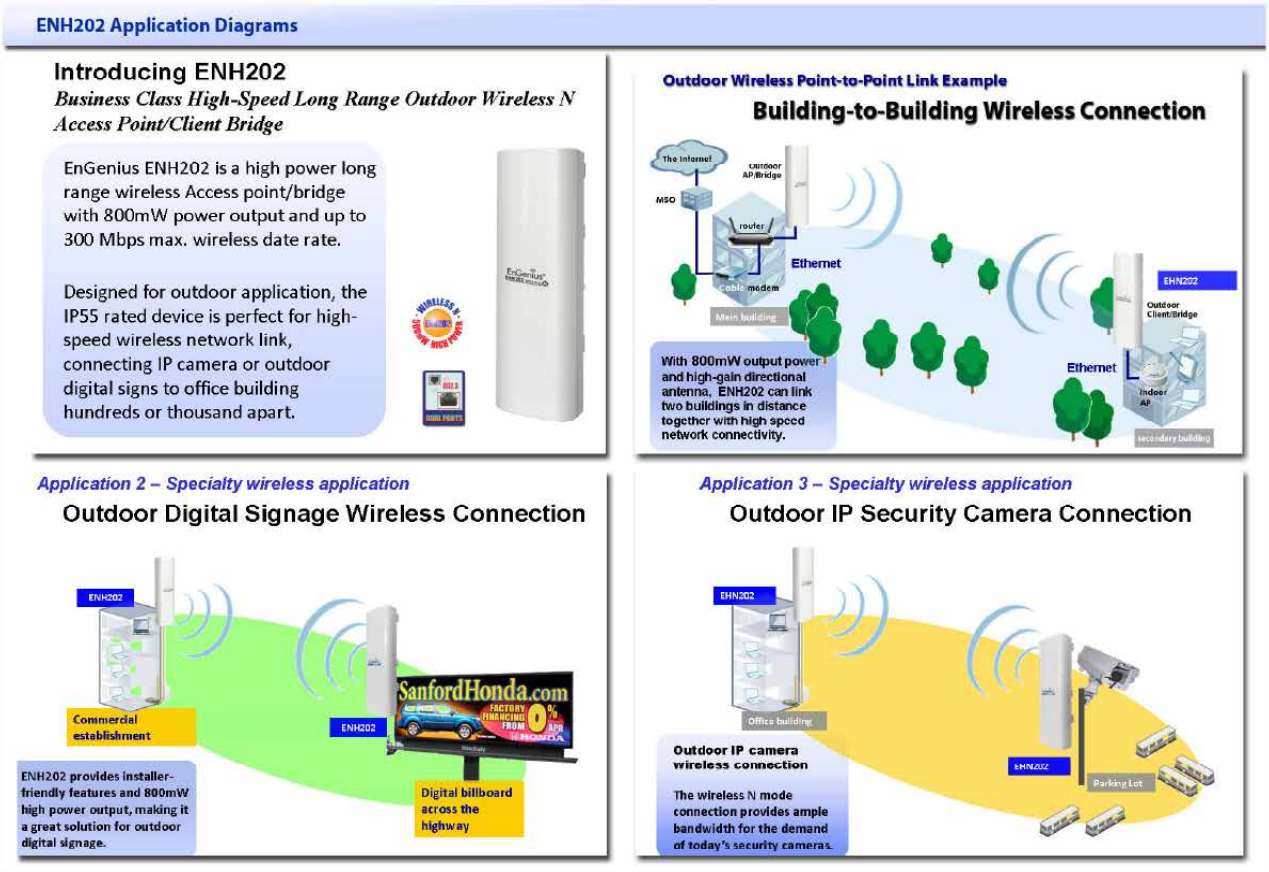
- Accesspunkt
- Brygga
- Client Router
- WDS

ENH202

Macab lanserar nu för hela Skandinavien, Engenius professionella routrar. Med all den support och trygghet du är van vid från Macab, kan du nu bygga WIFI-nät eller länka signal både enkelt och kostnadseffektivt. ENH202 är en professionell Brygga/Accesspunkt som kan användas för att distribuera WiFi. Användningsområdet kan vara att dela Internet mellan två fastigheter eller att förse en camping, restaurang eller konferensanläggning med WiFi. Ytterligare användningsområden kan vara digitala övervakningssystem eller annonspelare där man önskar få fram WiFi.


ENH202 Application Diagrams
Introducing ENH202
Business Class High-Speed Long Range Outdoor Wireless N Access Point/Client Bridge
EnGenius ENH202 is a high power long range wireless Access point/bridge with 800mW power output and up to 300 Mbps max. wireless date rate.
Designed for outdoor application, the IP55 rated device is perfect for high-speed wireless network link, connecting IP camera or outdoor digital signs to office building hundreds or thousand apart.
Outdoor Wireless Point-to-Point Link Example
Building-to-Building Wireless Connection
The Internet
MSO
router
Ethernet
Cable modem
Main building
With 800mW output power and high-gain directional antenna, ENH202 can link two buildings in distance together with high speed network connectivity.
ENH202
Outdoor Client/Bridge
Ethernet
Indoor AP
secondary building
Application 2 – Specialty wireless application
Outdoor Digital Signage Wireless Connection
ENH202
Commercial establishment
ENH202
SanfordHonda.com
Digital billboard across the highway
ENH202 provides installer-friendly features and 800mW high power output, making it a great solution for outdoor digital signage.
Application 3 – Specialty wireless application
Outdoor IP Security Camera Connection
ENH202
Office building
Outdoor IP camera wireless connection
The wireless N mode connection provides ample bandwidth for the demand of today's security cameras.
ENH202
Parking Lot

ENH202

Business Class, Outdoor, Long Range, 802.11b/g/n Bridge/Access Point

Key Differentiators

DESIGNED FOR OUTDOOR DEPLOYMENTS

IP65 waterproof housing and cable accessory kit protects against moisture, rain and dew

DESIGN FOR OUTDOOR DEPLOYMENT WITH IP65 WATERPROOF HOUSING AGAINST MOISTURE, RAIN

Cable accessory kit prevents rain and dew getting into the device from cable connection

UP TO 300Mbps

Compliant with 802.11n standard for connection rate up to 300Mbps - 6x the speed of similar 802.11g devices and backward compatible to 11g

INTERNAL HIGH-GAIN 10dBi DIRECTIONAL ANTENNA

MULTIPLE SSIDS WITH VLAN BINDING

Permits different levels of network access when activating multiple SSID broadcasts. Individual SSIDs can be linked to existing VLANs to control user or department access

EASY TO DEPLOY

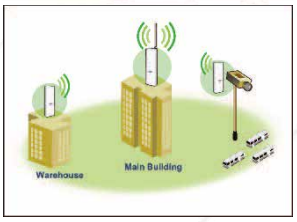
Includes signal strength LED indicators, pole mount and PoE injector kit

Ideal For:

OUTDOOR WIFI
OUTDOOR CPE

OUTDOOR WIRELESS
IP SURVEILLANCE CAMERA

OUTDOOR WIRELESS
SIGNAGE



POINT-TO-MULTIPOINT
COMMUNICATION

ENH202 – Technical Specifications

Specifications may change without notice.

HARDWARE SPECIFICATIONS

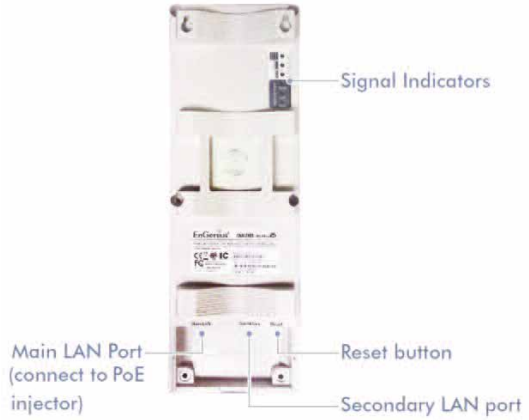
MCU/RF	Atheros AR7240/AR9283
Memory	32 MB
Flash	8 MB
Physical Interface	10/100 Fast Ethernet port x 2 Reset button x 1
LED Indicators	Power Status LAN (10/100Mbps) WLAN (Wireless is up) 3 x Link Quality (Client Bridge mode)
Power Requirement	Active Ethernet (Power over Ethernet) Proprietary PoE design Power Adapter 24VAC / 0.6A

RF SPECIFICATIONS

Wireless standard	IEEE802.11 b/g/n		
Frequency	2.412 ~ 2.472GHz (b/g/n)		
Modulation Technologies	IEEE 802.11b: DBQSK, DQPSK, CCK IEEE 802.11g: BQSK, QPSK, 16-QAM, 64-QAM IEEE 802.11n: BQSK, QPSK, 16-QAM, 64-QAM		
Operating Channels	11 channels		
Transmit Power	**802.11b(2.412 ~ 2.472GHz)** 29 dBm @ 1Mbps 29 dBm @ 2Mbps 29 dBm @ 5.5Mbps 29 dBm @ 11Mbps	**802.11g(2.412 ~ 2.472GHz)** 29 dBm @ 6Mbps 29 dBm @ 9Mbps 29 dBm @ 12Mbps 29 dBm @ 18Mbps 27 dBm @ 24Mbps 26 dBm @ 36Mbps 25 dBm @ 48Mbps 24 dBm @ 54Mbps	**802.11n(2.412 ~ 2.472GHz)** 29dBm @ MCS0 / MCS8 29 dBm @ MCS1 / MCS9 29 dBm @ MCS2 / MCS10 29 dBm @ MCS3 / MCS11 26dBm @ MCS4 / MCS12 25 dBm @ MCS5 / MCS13 24 dBm @ MCS6 / MCS14 23 dBm @ MCS7 / MCS15
Receiver Sensitivity	**802.11b(2.412 ~ 2.472GHz)** -97 dBm @ 1Mbps -95 dBm @ 2Mbps -92 dBm @ 5.5Mbps -89 dBm @ 11Mbps	**802.11g(2.412 ~ 2.472GHz)** -96 dBm @ 6Mbps -93 dBm @ 9Mbps -89 dBm @ 12Mbps -85 dBm @ 18Mbps -81 dBm @ 24Mbps -79 dBm @ 38Mbps -76 dBm @ 48Mbps -75 dBm @ 54Mbps	**802.11n(2.412 ~ 2.472GHz)** -95 dBm @ MCS0 / MCS8 -92 dBm @ MCS1 / MCS9 -87 dBm @ MCS2 / MCS10 -85 dBm @ MCS3 / MCS11 -80 dBm @ MCS4 / MCS12 -79 dBm @ MCS5 / MCS13 -74 dBm @ MCS6 / MCS14 -73 dBm @ MCS7 / MCS15
Antenna	Built-in 10dBi directional antenna ; Dual-polarity		

CONTENT OF PACKAGE - ENH202

- PoE Injector (EPE-24R)
- Power Adaptor
- CD with User's Manual
- QIG
- Mounting Set
- Special screw set



SOFTWARE SPECIFICATIONS

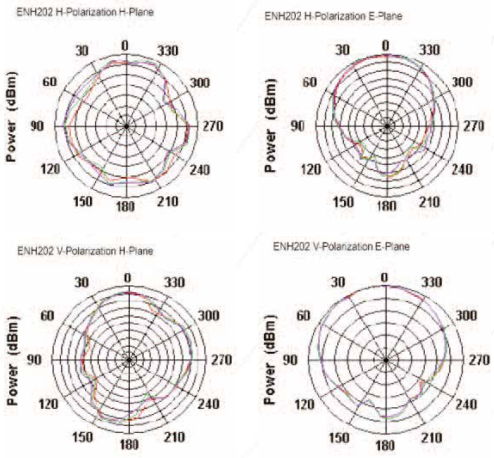
Topology	Infrastructure, ad-hoc
Protocol	IEEE802.3, 802.3u, 802.11 b/g/n (2.4 GHz)
Operation Mode	Access Point/Client Bridge/WDS bridge/WDS AP/WDS ST/Client Router
LAN	DHCP server/client
VPN	VPN Pass-through
Networking	PPPoE, PPTP, DHCP client, spanning tree, Channel bandwidth
Security	WEP encryption – 64/128/152 bit WPA/WPA2 Personal (WPA PSK uses TKIP or AES) WPA/WPA2 Enterprise (WPA-EAP usesTKIP) 802.1x Authenticator Hide SSID in beacons MAC address filtering, up to 50 fields Wireless STA (Client) connected list

MANAGEMENT

Configuration	Web-based configuration
Firmware Upgrade	Firmware upgrade via browser
Administrator Setting	Administrator password change
Reset Setting	Reboot; Reboot to factory default
SNMP	V1, V2c
MIB	MIB I, MIB II(RFC1213), Private MIB
Backup & Restore	Configuration backup, configuration restore
Diagnosis	Ping & Trace Route,
Time Setting	Manual; Auto: NTP

ENVIRONMENT & PHYSICAL

Temperature Range	Operation: -4°F ~ 158°F (-20°C ~ 70°C) Storage: -22°F ~176°F (-30°C ~ 80°C)
Humidity (non-condensing)	0%~90% typical
Dimensions	Length: 10.24" (260mm) Width : 3.31"(84mm) Height: 2.17"(55mm)
Weight	0.9 lb



ENH210EXT

- Accesspunkt
- Brygga
- Client Router
- WDS

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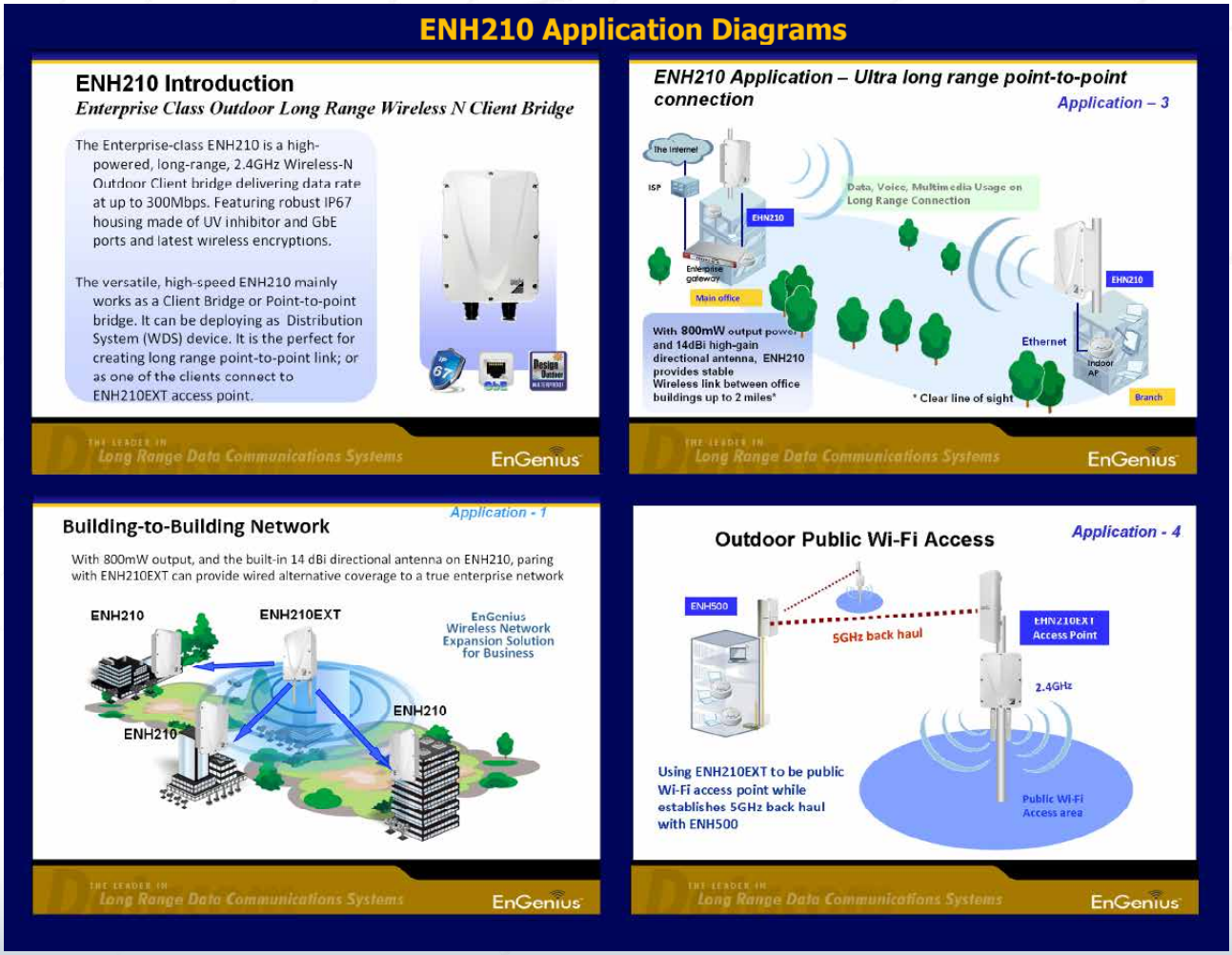
Med ENH210EXT får du ytterligare längre räckvidd än med ENH202, samtidigt som de externa antenningångarna gör det möjligt att specialdesigna en yttre antenn för precis den riktverkan eller öppningsvinkel du är ute efter. Även denna är gjord för tuff miljö och klarar genom sin IP-klass att monteras ute.


ENH210 Application Diagrams
ENH210 Introduction
Enterprise Class Outdoor Long Range Wireless N Client Bridge
The Enterprise-class ENH210 is a high-powered, long-range, 2.4GHz Wireless-N Outdoor Client bridge delivering data rate at up to 300Mbps. Featuring robust IP67 housing made of UV inhibitor and GbE ports and latest wireless encryptions.
The versatile, high-speed ENH210 mainly works as a Client Bridge or Point-to-point bridge. It can be deploying as Distribution System (WDS) device. It is the perfect for creating long range point-to-point link; or as one of the clients connect to ENH210EXT access point.
Long Range Data Communications Systems
EnGenius
ENH210 Application – Ultra long range point-to-point connection
Application – 3
the Internet
ISP
ENH210
Data, Voice, Multimedia Usage on Long Range Connection
Enterprise gateway
Main office
With 800mW output power and 14dBi high-gain directional antenna, ENH210 provides stable Wireless link between office buildings up to 2 miles*
* Clear line of sight
Ethernet
Indoor AP
Branch
Building-to-Building Network
Application - 1
With 800mW output, and the built-in 14 dBi directional antenna on ENH210, paring with ENH210EXT can provide wired alternative coverage to a true enterprise network
ENH210
ENH210EXT
EnGenius Wireless Network Expansion Solution for Business
ENH210
ENH210
Outdoor Public Wi-Fi Access
Application - 4
ENH500
5GHz back haul
ENH210EXT Access Point
2.4GHz
Using ENH210EXT to be public Wi-Fi access point while establishes 5GHz back haul with ENH500
Public Wi-Fi Access area

macab

ENH210EXT

THE LEADER IN LONG RANGE BUSINESS CLASS WIRELESS DATA

Enterprise Outdoor Long-Range Wireless-N Access Point

The Enterprise-class ENH210EXT is a high-powered, long-range 2.4GHz Wireless-N Outdoor Access Point delivering data at up to 300Mbps. The ENH201EXT provides outdoor wireless network access for campus environments or for connecting other buildings to a company network. It's ideal for small-to-medium sized companies that wish to provide outdoor access to the company network to their employees or to provide network and/or Internet connectivity via a company's existing broadband connection. It's an ideal solution for expanded the reach of an existing network beyond the walls of a building.

Its high 800mW transmit power and high receive sensitivity make it a robust solution for extending company networks. The ENH210EXT has been engineered to withstand harsh outdoor conditions and has an IP rating of 67 and a UV coating to resist prolonged exposure to the sun. The AP also includes two Gigabit Ethernet ports, one for connecting back to the LAN network and the other for a connected device like a surveillance camera.

The ENH201EXT includes EnGenius Zone Controller Access Point Management software that provides a robust suite of tools for IT managers, installers and network administrators who deploy, manage and maintain wireless networks. With Zone Controller, EnGenius Wireless Indoor and Outdoor Access Points and Client Bridges can be configured, controlled and monitored from one central location.

Compatible with EnGenius' comprehensive family of versatile, long-range Indoor and Outdoor Wireless Access Points, Client Bridges, AP routers, Zone Controller is SNMP (v1 and v2) compliant and provides IT administrators with real-time information to ease the deployment, configuration and management of EnGenius wireless networking solutions in complex networking environments.

Unlike ordinary outdoor APs, the ENH210EXT can be used in a number of configurations and support connectivity to and from other outdoor client bridges (ENH210) in multiple-building campus deployments. The ENH210EXT also can provide wireless connectivity to 3 times as many roaming clients within its range of operation.

Key Differentiators

ENTERPRISE-CLASS OUTDOOR HIGH-POWER ACCESS POINTS

- Compliant with IEEE802.11n standard with data rate up to 300Mbps
- Designed for outdoor deployment with IP67 rated housing, surge protected cable connector
- Supports IEEE 802.3af/at PoE (Power-over-Ethernet) standards

HIGH 800mW TRANSMIT POWER

- For longer range performance than ordinary outdoor APs
- Ideal for Point-to-Multipoint wireless deployments

INCLUDES ZONE CONTROLLER AP MANAGEMENT SOFTWARE

- Simplifies installation and deployment
- Easy-to-use Access Point remote configuration, management and monitoring tools

MULTIPLE MODES & SSIDS

- AP mode provides network access to clients
- Transparent bridging between buildings with WDSAP – Station mode
- Creates campus-wide wireless networks when used with EnGenius ENH210/202 wireless client bridges
- Broadcasts 8 multiple SSID's that supports SSID-VLAN binding

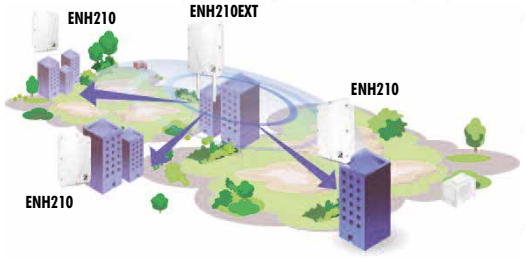
SUPPORT LATEST SECURITY STANDARDS

- WPA/WPA2 Personal (WPA-PSK using TKIP or AES)
- WPA/WPA2 Enterprise (WPA-EAP using TKIP) 802.1x Authenticator

USER FRIENDLY PACKAGING

- Quick installation guide
- Includes two antennas with N-type connectors
- PoE kit includes PoE injector and power adapter
- Mounting kit includes pole mount strap, wall-mount plate with screws

Ideal For:



POINT-TO-MULTIPOINT COMMUNICATION

OUTDOOR SECURITY CAMERA

EnGenius

ENH210EXT – Technical Specifications

Specifications may change without notice.

HARDWARE SPECIFICATIONS

MCU	Atheros AR7242
RF	Atheros AR9283
Memory	64 MB
Flash	16 MB
Physical Interface	10/100/1000 Gigabit Ethernet PoE (Power-over-Ethernet) port x 1 10/100/1000 Gigabit Ethernet port x 1 Reset button x 1
LED Indicators	Power Status LAN1 (10/100/1000Mbps) LAN2 (10/100/1000Mbps) WLAN (Wireless is enabled) 3x Link Quality (Client Bridge mode)
Antenna	External N-type connectors x 2; Omni Directional Antenna x 2
Power requirement	Active Ethernet (Power-over-Ethernet) IEEE 802.3af/at support Power Adapter 48V / 0.375A

RF SPECIFICATIONS

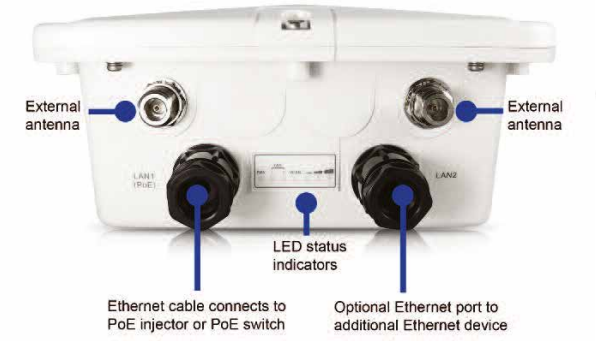
Wireless standard	IEEE802.11 b/g/n		
Frequency	2.412 ~ 2.472GH (b/g/n)		
Modulation Technology	IEEE 802.11b: DBQSK, DQPSK, CCK IEEE 802.11g: BQSK, QPSK, 16-QAM, 64-QAM IEEE 802.11n: BQSK, QPSK, 16-QAM, 64-QAM		
Operating Channels	11 channels		
Transmit Power	**802.11b(2.412 ~ 2.472GHz)** 29 dBm @ 1Mbps 29 dBm @ 2Mbps 29 dBm @ 5.5Mbps 29 dBm @ 11Mbps	**802.11g(2.412 ~ 2.472GHz)** 29 dBm @ 6Mbps 29 dBm @ 9Mbps 29 dBm @ 12Mbps 29 dBm @ 18Mbps 27 dBm @ 24Mbps 27 dBm @ 36Mbps 26 dBm @ 48Mbps 25 dBm @ 54Mbps	**802.11n(2.412 ~ 2.472GHz)** 29 dBm @ MCS0/MCS8 29 dBm @ MCS1/MCS9 29 dBm @ MCS2/MCS10 29 dBm @ MCS3/MCS11 29 dBm @ MCS4/MCS12 25 dBm @ MCS5/MCS13 24 dBm @ MCS6/MCS14 23 dBm @ MCS7/MCS15
Receiver Sensitivity	**802.11b(2.412 ~ 2.472GHz)** -97 dBm @ 1Mbps -95 dBm @ 2Mbps -92 dBm @ 5.5Mbps -89 dBm @ 11Mbps	**802.11g(2.412 ~ 2.472GHz)** -96 dBm @ 6Mbps -93 dBm @ 9Mbps -89 dBm @ 12Mbps -85 dBm @ 18Mbps -81 dBm @ 24Mbps -79 dBm @ 36Mbps -76 dBm @ 48Mbps -75 dBm @ 54Mbps	**802.11n(2.412~2.472 GHz)** -95 dBm @ MCS0/MCS8 -92 dBm @ MCS1/MCS9 -87 dBm @ MCS2/MCS10 -85 dBm @ MCS3/MCS11 -80 dBm @ MCS4/MCS12 -79 dBm @ MCS5/MCS13 -74 dBm @ MCS6/MCS14 -73 dBm @ MCS7/MCS15

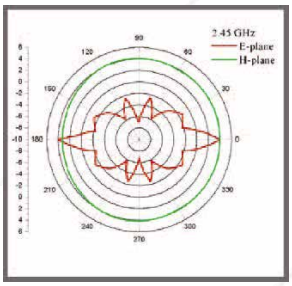
SOFTWARE SPECIFICATIONS

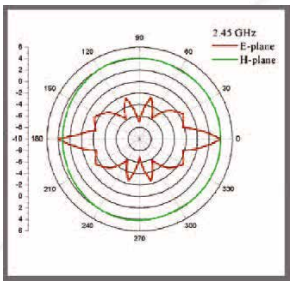
Topology	Infrastructure, ad hoc (WDS bridge)
Protocol	IEEE802.11 b/g/n (2.4GHz) 802.3, 802.3u, 802.3ab, 802.1D
Operation Mode	Access Point / Client Bridge / Client Router / WDS
LAN	DHCP server/client
VPN	VPN Pass-through
Networking	PPPoE, PPTP, DHCP client, spanning tree, Channel bandwidth
Security	WEP Encryption-64/128/152 bit WPA/WPA2 Personal (WPA-PSK using TKIP or AES) WPA/WPA2 Enterprise (WPA-EAP using TKIP) 802.1x Authenticator Hide SSID in beacons MAC address filtering, up to 50 field Wireless STA (Client) connected list MAC address filtering, up to 50 fields Wireless STA (Client) connected list
Management	Interface: Web-based configuration Firmware upgrade via browser Administrator password changeable Reboot; Reboot to factory default System monitoring: Status in hand, statistics and event log Configuration backup, configuration retore Ping & Trace Route, Remote management: SNMP:v1, v2c; MIB I, MIB II(RFC1213), Private MIB Time setting: Manual; Auto: NTP
Certifications	FCC 15B, FCC 15C, IC, CSA

ENVIRONMENT & PHYSICAL

Temperature Range	Operation: -4°F ~ 158°F (-20°C ~ 70°C) Storage: -22°F ~176°F (-30°C ~ 80°C)
Humidity (non-condensing)	0% 90 % typical
Dimensions	12.2" (L) x 9.0" (W) x 4.21" (H)
Weight	3.00 lbs
Content of Package	ENH210EXT x 1 PoE Injector (EPE-48GR) Power Adaptor 5dBi Omni Antenna x 2 CD with User's Manual







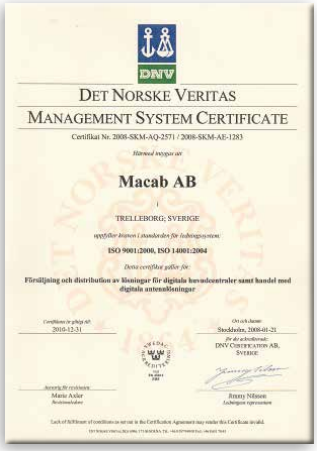
Förklaring

- Accesspunkt - Låter flera trådlösa enheter ansluta till nätverket.
- Brygga - Kopplar samman två nät i t.ex olika fastigheter till samma nät.
- Client Router - skickar vidare nätverket till ett sekundärt nät och delar ut nya IP-adresser.
- WDS - Utvidgar det trådlösa nätverket.

EMS

Environmental Management Standard 14001

Macab have since many years worked with the implementation of an environmental management system. We received the certification 2008 and we are audited annually by an independent ISO 14001 registrar. The ISO 14001 EMS standard is a voluntary international standard for effectively manage the impact on the environment.


DNV

DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certifikat Nr. 2008-SKM-AQ-2571 / 2008-SKM-AE-1283

Härmed intygas att

Macab AB

TRELLEBORG; SVERIGE

uppfyller kraven i standarden för ledningssystem:

ISO 9001:2008, ISO 14001:2004

Detta certifikat gäller för:

Försäljning och distribution av lösningar för digitala huvudcentraler samt handel med digitala antennlösningar

Certifikatet är giltigt till: 2010-12-31

Givet och datum: Stockholm, 2008-01-21

För det ackrediterade: DNV CERTIFICATION AB, SVERIGE

Ansvarig för certifikatet: Marie Axler, Kvalitetsansvarig

Jimmy Nilsson, Ledningens representant

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

ISO 9001

Quality Management System

Since 2008, Macab is one of few companies in the antenna business, achieving the 9001 quality management standard. The certification proves that we are working diligently to establish quality and performance objectives. The overall aim is to achieve customer satisfaction through consistent products and services.

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